

19. Write a short note on the following

- (a) RS flip flop
- (b) Clocked SR flip flop
- (c) D flip flop

20. Implement an R-2R ladder DAC network with neat diagram.

NOVEMBER/DECEMBER 2025

23UEL41 — DIGITAL ELECTRONICS

Time : Three hours

Maximum : 75 marks

SECTION A — (10 × 2 = 20 marks)

Answer ALL questions.

1. Convert $(1101)_2$ to decimal.
2. Define BCD code.
3. State De Morgan's theorems.
4. Define Minterm and Maxterm.
5. List the applications of demultiplexers.
6. State the task of half adder and full adder.
7. Define flip-flop.
8. List the applications of shift register.
9. Write the principle of dual-slop ADC.
10. Differentiate between DAC and ADC.



SECTION B — (5 × 5 = 25 marks)

Answer ALL questions.

11. (a) Convert $(27)_{10}$ into binary, octal and hexadecimal.

Or

- (b) Convert the following octal numbers to binary numbers (i) 45 (ii) 312 (iii) 567

12. (a) Reduce the following Boolean functions.
 $F = ABC + \bar{A}\bar{B}C + A\bar{B}\bar{C}$.

Or

- (b) Compare SOP and POS expressions.

13. (a) Explain the adder and subtractor circuits.

Or

- (b) Draw the circuit diagram of encoder circuit and explain its operation.

14. (a) Discuss the construction and working of ring counter.

Or

- (b) Write any five applications of IC 555 timer.

15. (a) Evaluate the accuracy of ADC in terms of resolution and number of bits.

Or

- (b) Design 8 bit successive approximation method of ADC.



SECTION C — (3 × 10 = 30 marks)

Answer any THREE questions.

16. Convert the following decimal number to hexadecimal number (a) 3571 (b) 3887 (c) 1237 (d) 408

17. Enter the following function on a Karnaugh map and solve it.

(a) $F = ABC + A\bar{B}C + AB\bar{C}$

(b) $F = \bar{A}\bar{B}\bar{C} + \bar{A}BC + A\bar{B}\bar{C}$

(c) $F = A + \bar{A}C + B\bar{C}$

18. Draw the circuit diagram of multiplexer and write its operation with truth table.